Title (en)

METHOD FOR PREDICTING RATE OF PENETRATION USING BIT-SPECIFIC COEFFICIENTS OF SLIDING FRICTION AND MECHANICAL EFFICIENCY AS A FUNCTION OF CONFINED COMPRESSIVE STRENGTH

Title (de)

VERFAHREN ZUR VORHERSAGE DER DURCHDRINGUNGSRATE UNTER VERWENDUNG VON BITSPEZIFISCHEN KOEFFIZIENTEN VON GLEITREIBUNG UND MECHANISCHER EFFIZIENZ ALS FUNKTION EINER EINGEGRENZTEN KOMPRESSIVEN STÄRKE

Title (fr)

PROCEDE DE PREVISION DU TAUX DE PENETRATION AU MOYEN DE COEFFICIENTS SPECIFIQUES DE TREPAN DE LA FRICTION DE GLISSEMENT ET DE RENDEMENT MECANIQUE EN FONCTION DE LA RESISTANCE A LA COMPRESSION AVEC ETREINTE LATERALE

Publication

EP 1836509 A2 20070926 (EN)

Application

EP 05853623 A 20051209

Priority

- US 2005044742 W 20051209
- US 1589904 A 20041216

Abstract (en)

[origin: WO2006065678A2] A method for predicting the rate of penetration (ROP) of a drill bit drilling a well bore through intervals of rock of a subterranean formation is provided. The method uses an equation based upon specific energy principles. A relationship is determined between a bit-specific coefficient of sliding friction μ and confined compressive strength CCS over a range of confined compressive strengths CCS. Similarly, another relationship for the drill bit is determined between mechanical efficiency EFF_M and confined compressive strength CCS over a range of confined compressive strengths CCS. Confined compressive strength CCS is estimated for intervals of rock through which the drill bit is to be used to drill a well bore. The rate of penetration ROP is then calculated utilizing the estimates of confined compressive strength CCS of the intervals of rock to be drilled and those determined relationships between the bit-specific coefficient of sliding friction μ and the mechanical efficiency EFF_M and the confined compressive strengths CCS, as well as using estimated drill bit speeds N (RPM) and weights on bit (WOB).

IPC 8 full level

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